

M.Sc. Semester-III (Physics)
July-September-2021
CPH-603 (Interdisciplinary) Biophysics

કુલ સમય :- : ૬૦ મીનીટ

કુલ પ્રશ્નો : ૫૦

વિદ્યાર્થીએ ટીક કરવાના પ્રશ્નો : ૩૫

નોંધ : વિદ્યાર્થીએ માત્ર ૩૫ પ્રશ્નો જ ટીક કરવાના રહેશે. જો વધારે ટીક કરેલ હશે તો પ્રથમ ૩૫ પ્રશ્નો જ ગણતરીમાં લેવામાં આવશે.

- (1) The advantage of..... chromatography is that large number of samples can be studied simultaneously.
(A) thin layer (B) column (C) paper (D) none of these
- (2) The cellulose fibers of a sheet of special chromatographic acts as a support or the stationary phase.
(A) thin layer (B) paper (C) column (D) none of these
- (3) technique separates the sample into its components based on the degree of their absorption.
(A) absorption (B) partition (C) emission (D) none of these
- (4) There aretypes of partition chromatography.
(A) two (B) three (C) four (D) five
- (5) is the widely used for the separation of biological compounds either as a normal phase method or as a reverse phase method.
(A) HPLC (B) HLPC (C) CPHL (D) LPCH
- (6) The separation of samples based on their molecular weights is known as gel filtration or molecular sieve chromatography.
(A) MEC (B) HPLC (C) MCE (D) none of these
- (7)electrophoresis is the mixture to be analyzed is applied as a small spot or very thin band to a supporting medium such as a gel.
(A) moving boundary (B) Zone (C) low voltage (D) none of these
- (8) A disadvantage ofelectrophoresis is that diffusion processes may influence the migration of the molecules so that it is not strictly act according to the charges on them.
(A) low voltage paper (B) High Voltage (C) gel (D) none of these
- (9) Electrophoresis takes advantage of the fact that molecules with differing ratio will migrate at differing rates in an electric field.
(A) e/m (B) m/e (C) em (D) none of these
- (10) focusing is an electrophoresis method where pH gradient is used along with the voltage gradient.
(A) low voltage (B) high voltage (C) continuous-flow (D) isoelectric
- (11) Biological macromolecules have molecular weights of the order of daltons.
(A) 100 (B) 1000 (C) 10000 (D) 1000000
- (12) The movement of solvent molecules across a semipermeable membrane that separates two solutions of different solute concentration is known as
(A) Osmosis (B) diffusion (C) motion (D) none of these
- (13) The Ultra centrifuge is an instrument used to measure sedimentation coefficients by rotating the sample at speed RPM.
(A) 100 (B) 10 (C) 1000 (D) 100000
- (14) Molecular..... determination can be carried out by the sedimentation velocity technique method.
(A) speed (B) Momentum (C) weight (D) none of these
- (15) The interference system uses a double sector Cell, one for solvent and the other for solution.
(A) Rayleigh (B) Michelson (C) sharing (D) none of these
- (16) The difference in refractive index between any point in the cell and meniscus is proportional to the concentration of the at that point.
(A) solute (B) solution (C) water (D) none of these
- (17) The advantage of zonal sedimentation is that sample is used.
(A) large amount of (B) small amount of (C) moderate (D) none of these
- (18) is the resistance to liquid flow.
(A) viscosity (B) temperature (C) pressure (D) none of these
- (19) Molecules in solution undergo both translation and translational and rotational displacements due to motion of the solvent.
(A) Newtonian (B) Brownian (C) Lagrangian (D) none of these
- (20) The coefficient of rotational friction is a
(A) vector (B) scalar (C) tensor (D) none of these
- (21) Flow and electric birefringence methods are based on the differences between the refractive index measure in different directions that are produced by molecules in the solution.
(A) oriented (B) vibrated (C) translated (D) none of these
- (22)is a technique widely used to determine the molecular weight of macromolecules in solution.
(A) light diffraction (B) light interference (C) light scattering (D) none of these

- (23) In optical rotationally dispersion (ORD), if the rotation is when seen looking towards the light source, it is said to be dextro- rotatory.
 (A) any direction (B) Anticlockwise (C) clockwise (D) none of these
- (24) Fluorescence is a phenomenon by which light is absorbed by a system at oneand emitted by it at different.
 (A) wavelength (B) frequency (C) periodic time (D) none of these
- (25) Infrared radiation is heat radiation and term 'infrared' extends from 10^{14} toHz.
 (A) 10^{11} (B) 10^9 (C) 10^3 (D) 10^2
- (26) arises when a beam of light is allowed to fall on a transparent substance such as a solution of a biological molecule.
 (A) rotational (B) vibrational (C) Raman spectroscopy (D) none of these
- (27) The measurement of the change in optical activity with change inis called optical rotationally dispersion.
 (A) wavelength (B) frequency (C) periodic time (D) none of these
- (28) The difference between the absorption of the right circularly polarized light and the left circularly polarized light is called
 (A) Dichroism (B) Rotary Dichroism (C) circularDichroism (D) none of these.
- (29) Spectroscopy is a probe of vibrational motion of the molecules.
 (A) infrared (B) ultraviolet (C) visible (D) none of these
- (30) Thearises from a coupling of the electronic and vibrational states of the molecule.
 (A) electronic effect (B) rotational (C) Raman effect (D) none of the above
- (31) images are images that cannot be captured on a screen or on photographic film, except with the help of additional lenses.
 (A) virtual (B) real (C) any (D) none of these
- (32) lens always gives a smaller virtual image of any object viewed through it.
 (A) any (B) convex (C) concave (D) None of these
- (33) A limit of magnifying power of a microscope is the of the light used.
 (A) periodic time (B) frequency (C) wavelength (D) none of these
- (34) The total magnification that is usually possible with light microscopes using ordinary light is about times.
 (A) 80 (B) 800 (C) 8000 (D) 80000
- (35) A major advantage of electron microscope that electrons can be focussed by means oflense.
 (A) magnetic (B) electric (C) concave (D) Convex
- (36) Electron microscopy can produce of images of objects such as
 (A) cells (B) viruses (C) DNA (D) all of the above
- (37) In the most of the incident beam passes through the specimen unimpeded and very little is absorbed.
 (A) TEM (B) SEM (C) telescope (D) none of these
- (38) The resolution of the image depends on the size of the electron spot used to scan the specimen, and this may be as small as $\text{\AA}$
 (A) 10 (B) 20 (C) 50 (D) 5
- (39) Preparation of specimen is one of the most important space steps which involves
 (A) preservation (B) staining (C) Dehydration (D) all of the above
- (40) Imagesuses many images of the sample to produce a single clear image.
 (A) reconstruction (B) interference (C) diffraction (D) all of the above
- (41) Electronis a popular technique to obtain low-resolution images of the large particles.
 (A) interference (B) diffraction (C) Polarization (D) none of the above
- (42) NMR spectroscopy is one of the most important experimental techniques currently used in
 (A) chemical (B) physical (C) biophysics (D) none of the none of these
- (43) In NMR the frequency at which the transition occurs is called thefrequency.
 (A) optimum (B) fixed (C) resonance (D) none of these
- (44) In chemistry and Biology, the most useful nuclei are those with Spain
 (A) 0.5 (B) 0.75 (C) 1 (D) 1.5
- (45) These are main methods by which the NMR experiment is performed.
 (A) two (B) three (C) four (D) five
- (46) The Fourier transform contains information of
 (A) resonancefrequency (B) decay (C) energy transfer (D) all of the above
- (47) Measurable parameters in NMR is
 (A) chemical shift (B) intensity (C) line width (D) all of the above
- (48) NMR lends itself to the study of sample in the solid-state.
 (A) C 12 (B) C 11 (C) C 13 (D) none of the above
- (49) multidimensional NMR has been used to determine the structures of small
 (A) fat (B) carbohydrate (C) proteins (D) none of these
- (50) Muscles are transducers which converts energy to the mechanical energy.
 (A) chemical (B) electrical (C) potential (D) none of the above